



Side Effects as Determinants of Contraceptive Non-Compliance and Failure among Fertile Age Couples in Makassar, Indonesia

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ABSTRACT

Contraceptive side effects are a key determinant of contraceptive choice and continuation and often lead to discontinuation or method switching. This poses a public health concern as it reduces contraceptive adherence and effectiveness, thereby increasing the risk of unintended pregnancy, unintended birth, and abortion. This study aimed to examine the association between contraceptive side effects, non-compliance, and contraceptive failure among fertile-age couples in the working area of the Kassi Community Health Center, Makassar City. An observational analytical study with a cross-sectional design was conducted among 76 active family planning acceptors, selected using purposive sampling. Data were collected through structured interviews using questionnaires. The results showed that menstrual disorders ($p = 0.004$), vaginal discharge ($p = 0.002$), weight changes ($p = 0.041$), mood changes ($p = 0.012$), and decreased libido ($p = 0.002$) were significantly associated with non-compliance. Menstrual disorders ($p = 0.006$), vaginal discharge ($p = 0.003$), and decreased libido ($p = 0.015$) were also significantly associated with contraceptive failure. In addition, non-compliance was strongly associated with contraceptive failure ($p = 0.000$). Contraceptive side effects contribute both directly and indirectly to contraceptive failure, primarily through non-compliance, particularly among users of hormonal contraception. Strengthening family planning counseling and providing comprehensive information on contraceptive effectiveness and side effects are essential to reduce non-compliance and failure rates.

INTRODUCTION

Family planning is a strategy to reduce high-risk pregnancies, reduce unsafe abortions, and enable birth spacing and birth control. (Schrumph *et al.*, 2020) (Hamang, SH, Masnilawati, A., Karuniawati, N., & Nurhayati, 2022) However, the rate of contraceptive discontinuation due to side effects or health problems remains high. (Gayatri and Irawaty, 2021) Although access to contraception has increased, currently available contraceptive options are inadequate to meet the needs of many women, with high rates of failure, non-use, switching, and discontinuation. (Haddad, Townsend, and Sitruk-Ware, 2021) (Page, Karuniawati, *et al.*, 2025) Leading to high rates of unwanted pregnancies even when contraception is relatively easy to obtain. (Wondie, 2021).

Many factors influence a person in choosing a contraceptive to use, including individual factors, health factors, cost factors, and side effect factors. (Elsalam, 2022) Side effects are still a factor that can influence the choice of contraception. The side effect factor is one of the causes of PUS in choosing and using contraceptives in the Kassi-Kassi Community Health Center Work Area of Makassar City, (84.3%) non-MKJP family planning participants experienced side effects and were 46.129 times more likely to choose this type of contraceptive compared to family planning acceptors who had never experienced side effects from using contraceptives. (Masnilawati and Karuniawati, 2022) A cohort study in Kenya (2022) showed that side effects such as irregular bleeding, weight gain, and sexual dysfunction increased the risk of discontinuation by around 2.4–2.7 times, the proportion of discontinuations due to side effects reached 30–40%, in line with data that almost one-third to two-fifths of users discontinued contraception due to side effects. (Rothschild *et al.*, 2022).

A study conducted by Bright (2023) found that side effects of contraceptive use are a potential deterrent to consistent use among women. Consistent contraceptive use can significantly reduce the risk of unintended pregnancy. However, perceived and experienced side effects associated with modern contraceptives contribute significantly to discontinuation and switching in women. (Mukanga *et al.*, 2023) Contraceptive side effects, whether experienced or anticipated, have been identified as a common reason why women choose not to start or stop contraception. (Schrumpf *et al.*, 2020) (Page, Masnilawati, *et al.*, 2025).

Discontinuing contraceptive use is a significant public health issue as it contributes to an increased risk of unwanted pregnancy, unplanned birth, and abortion (Gebeyehu *et al.*, 2022). Furthermore, adherence to contraceptive use plays a crucial role in determining the effectiveness of the method, as low adherence can increase the incidence of pregnancy and birth during the period of contraceptive use, ultimately leading to population growth (Hayati, 2022). Discontinuing and switching contraceptive methods are also known to increase the risk of contraceptive failure and unwanted pregnancy. In Indonesia, research shows that approximately 16–17% of women become pregnant within one year of discontinuing birth control pills or injections due to side effects, with the risk being higher in younger age groups and unemployed women (Gayatri and Irawaty, 2021) (Masnilawati, Andi. Asfar, 2023). On the other hand, several studies report that many women continue to use contraceptives despite experiencing side effects. However, dissatisfaction, such as physical discomfort, still increases the potential for discontinuation, especially in individuals with strong motivations to delay pregnancy (Rothschild *et al.*, 2022).

Most previous studies have focused on one or two factors in isolation without comprehensively evaluating the interrelationship between all three in fertile couples, the primary target group of family planning programs. By utilizing local contextual data, this study is expected to provide more comprehensive empirical evidence to strengthen family planning counseling strategies and improve risk-based family planning services. The purpose of this study was to examine the relationship between contraceptive side effects, adherence levels, and the incidence of contraceptive failure among fertile couples in the Kassi-Kassi Community Health Center, Makassar City.

METHOD

This study is an observational analytical study using a Cross-Sectional Study design conducted in the working area of the Kassi-kassi Community Health Center, Rappocini District, Makassar City, which began in September to December 2025. The population of this study was all active family planning participants in the working area of the Kassi-kassi Community Health Center, Rappocini District, Makassar City, totaling 349 acceptors. Determination of sample size was carried out using the Slovin formula and based on these calculations, a minimum sample size of 76 family planning acceptors was obtained. The sample selected was hormonal and non-hormonal family planning acceptors using Purposive Sampling techniques based on criteria that were considered appropriate to the predetermined sample criteria. Inclusion criteria: Hormonal and non-hormonal family planning acceptors, using contraceptives for at least the last 6 months, and being able to read and understand Indonesian, Exclusion criteria: experiencing mental or communication disorders.

Data in the study related to the history of contraceptive use, perceived side effects of contraception, compliance and history of contraceptive failure were obtained through interviews and using a structured questionnaire that had been tested for reliability and validity to determine each question precisely that could be used in the study. Data were processed and analyzed using SPSS, with a bivariate analysis using the *Chi-square statistical test*.

This research has obtained ethical approval from the Health Research Ethics Committee of the Muslim University of Indonesia with ethical approval letter number 618/A.1/KEP-UMI/VIII/2025, registration number UMI012508697.

RESULTS

Characteristics of KB acceptors based on age, the most KB acceptors are at the age of 30-39 years 30 people (39.5%) and the least at the age of ≥ 50 years (2.6%). Viewed from the education of participants, the most were found to have high school education (52.3%), while in the occupational group more were unemployed/housewives as many as (92.1%) and the number of KB acceptor parity that is most is the ideal category as many as (59.1) (Table 1).

The most commonly used contraceptive method by family planning acceptors was the implant, with (43.4%), and the least commonly used contraceptive method was coitus interruptus (1.3%). (Table 2).

The most commonly used contraceptive method by family planning acceptors previously was the 3-monthly injection (55.2%), and the least commonly used contraceptive method was the 1-monthly and 3-monthly injection (1.3%) (Table 3).

Side Effects on Contraceptive Compliance

The results of the statistical test were obtained with ($p < 0.05$) which means there is a significant relationship between the experience of side effects of menstrual disorders, vaginal discharge, weight gain, breast pain, mood changes, and decreased libido with contraceptive compliance in fertile age couples in the working area of the Kass-Kassi Community Health Center in Makassar City (Table 4).

Table 1. Respondent Characteristics (n:76)

Respondent Characteristics	Frequency	%
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Age	<20 years	4	5.3
	20-29 years old	30	39.5
	30-39 years	23	30.3
	40-49 years	17	22.4
	>/=50 years	2	2.6
Education	S1	10	13.2
	Senior High School	42	55.3
	High School/Vocational School	1	1.3
	Junior High School	16	21.1
	Elementary School	7	9.2
Work	housewife	70	92.1
	Private Employees	3	3.9
	Trader	3	3.9
Parity	Ideal	45	59.2
	Enough	31	40.8

Source: Primary Data, 2025

Table 2. Frequency Distribution of Types and Methods of Contraception

Variables		Frequency	%
Types of Contraception	Coitus Interruptus	1	1.3
	Implant	33	43.4
	IUD	14	18.4
	MOW	2	2.6
	Pill	8	10.5
	1 month injection	2	2.6
	3 months injection	16	21.1
Contraceptive Methods	Hormonal	58	76.3
	Non-Hormonal	18	23.7
Duration of Contraceptive Use	>2	36	47.4
	1 to 2	40	52.6

Source: Primary Data, 2025

There is a significant relationship between the experience of side effects of menstrual disorders, vaginal discharge, and decreased libido with contraceptive failure in fertile age couples in the working area of the Kass-Kassi Community Health Center in Makassar City (Table 5).

The results of the statistical test obtained a p value of $p\text{-Value} = 0.000 < \alpha$ value (0.05) which means that there is a significant relationship between compliance with the failure of KB used by KB acceptors in Fertile Age Couples in the working area of the Kass-Kassi Community Health Center, Makassar City (Table 6).

Table 3. Frequency Distribution of Types and Methods of Contraception Previously Used

Types of Contraception	Frequency	%
Coitus interruptus	4	5.3
Implant	12	15.8
IUD	4	5.3
Pill	3	3.9
Pills and 3-month injections	6	7.9
1 month injection	4	5.3
3 months injection	42	55.2
1 month and 3 months injections	1	1.3
Total	76	100

Source: Primary Data, 2025

Table 4. Relationship of Side Effects to Contraceptive Compliance in PUS

Side effects		Usage Compliance						Total		P value (<0.05)
		Not obey		Sometimes		Obedient				
		n	%	n	%	n	%	n	%	
Menstrual Disorders	Yes	30	48.4	4	6.5	28	45.2	62	100	0.004
	No	0	0	2	14.3	12	85.7	14	100	
Vaginal discharge	Yes	16	64	13	12	6	24	25	100	0.002
	No	14	27.5	3	5.9	34	66.7	51	100	
Weight	Increase	9	24.3	2	5.4	26	70.3	37	100	0.041
	Decrease	8	50	1	6.3	7	43.8	16	100	
	Still	13	56.5	3	13	7	30.4	23	100	
Headache/Dizziness	Yes	16	57.1	2	7.1	10	36.7	28	100	0.051
	No	14	29.2	4	8.3	30	62.5	48	100	
Breast Pain	Yes	5	100	0	0	0	0	5	100	0.17
	No	25	35.2	6	8.5	40	56.3	71	100	
Nausea and vomiting	Yes	2	66.7	0	0	1	33.3	3	100	0.591
	No	28	38.4	6	8.2	39	53.4	73	100	
Mood Swings	Yes	18	60	2	6.7	10	33.3	30	100	0.012
	No	12	26.1	4	8.7	30	65.2	46	100	
Decreased Libido	Yes	19	63.3	2	6.7	9	30	30	100	0.002
	No	11	23.9	4	8.7	31	67.4	46	100	
Total		30	39.5	6	7.9	40	52.6	76	100	

Source: Primary Data (Processed), 2025

DISCUSSION

This study shows that various contraceptive side effects are significantly associated with contraceptive compliance and failure rates among couples of childbearing age (PUS) in the Kassi-Kassi Community Health Center area of Makassar. These findings reinforce previous

evidence that side effects are a critical determinant of continued contraceptive use and the success of family planning programs.

Table 5. Relationship between Side Effects and KB Failure in PUS

Side effects		Contraceptive Failure				Total		P value (<0.05)
		Fail		No Fail				
		n	%	n	%	n	%	
Menstrual Disorders	Yes	41	66.1	21	33.9	62	100	0.006
	No	233	21.4	11	78.6	14	100	
Vaginal discharge	Yes	21	84	4	16	25	100	0.003
	No	23	45.1	28	54.9	51	100	
Weight	Increase	18	48.6	19	51.4	37	100	0.060
	Decrease	8	50	8	50	16	100	
	Still	18	78.3	5	21.7	23	100	
Headache/Dizziness	Yes	19	67.9	9	32.1	28	100	0.270
	No	25	52.1	23	47.9	48	100	
Breast Pain	Yes	5	100	0	0	5	100	0.132
	No	39	54.9	32	45.1	71	100	
Nausea and vomiting	Yes	3	100	0	0	3	100	0.363
	No	41	56.2	32	43.8	73	100	
Mood Swings	Yes	21	70	9	30	30	100	0.137
	No	23	50	23	50	46	100	
Decreased Libido	Yes	23	76.7	7	23.3	30	100	0.015
	No	21	45.7	25	54.3	46	100	
Total		44	57.9	32	42.1	76	100	

Source: Primary Data (Processed), 2025

Table 6. Relationship between Compliance and Family Planning Failure in PUS

Compliance	KB failure				Total		P value (<0.05)
	Fail		No Fail				
	n	%	n	%	n	%	
Not obey	30	100	0	0	30	100	0.000
Sometimes	4	66.7	2	33.3	6	100	
Obedient	10	25	30	75	40	100	
Total	44	57.9	32	42.1	76	100	

Source: Primary Data (Processed), 2025

Side Effects and Compliance with Contraceptive Use

This study confirms previous findings showing that side effects are a significant factor influencing non-compliance and contraceptive failure. This is in line with (Mbuzeleni et al , 2023), (Gebeyehu *et al.* , 2022) and (Mukanga *et al.* , 2023). The results of this study indicate that physical and psychological side effects play a significant role in reducing contraceptive

compliance. This is consistent with previous research, which reported that side effects are a contributing factor to PUS's decision to choose and use contraceptives, with women 46.129 times more likely to choose a contraceptive method compared to family planning users who have never experienced side effects (Masnilawati et al , 2022).

Menstrual irregularities were the most common side effect found in this study, consistent with findings (Rothschild *et al.* , 2022) particularly among hormonal contraceptive users. Changes in menstrual patterns often cause concern among users and result in delayed follow-up visits or irregular contraceptive use. Furthermore, mood swings and decreased libido have also been shown to decrease adherence, as reported in studies (Sultan *et al.* , 2024) , (Martell *et al.* , 2023) and (Sumiyati et al, 2022). These findings provide important local evidence for primary health care, particularly in community health centers, that contraceptive counseling needs to pay more attention to physical, psychological, and sexual complaints to ensure more consistent contraceptive use and reduce the risk of unwanted pregnancy.

Contraceptive Side Effects and Failure

This study expands on previous evidence that contraceptive side effects are not only uncomfortable but also contribute to non-adherence and an increased risk of contraceptive failure due to inconsistent use (Vuaghan, 2017), (Odwe *et al.* , 2020). Unlike most previous studies that focused primarily on method discontinuation, this study demonstrates that various side effects, including menstrual irregularities, abnormal vaginal discharge, and decreased libido, are directly related to adherence and contraceptive failure in couples of childbearing age.

Abnormal vaginal discharge is a common complaint in women of reproductive age and can be a serious condition. Specifically, abnormal vaginal discharge was found to be significantly associated with adherence, likely influenced by acceptors' negative perceptions and concerns about their reproductive health (Egwim *et al.* , 2024), (Zimmerman *et al.* , 2021). Furthermore, decreased libido is also a significant factor influencing continued contraceptive use, particularly among hormonal method users, as reported (Gaidha et al , 2023), (Esme *et al.* , 2023), (Wood *et al.* , 2020). These findings provide contextual empirical evidence at the primary health care level in Indonesia and emphasize the importance of strengthening comprehensive contraceptive counseling, sensitive to physical and sexual complaints, to improve adherence and reduce the risk of unwanted pregnancy.

Contraceptive Compliance and Failure

Adherence is a key determinant of contraceptive success. The finding that all non-adherent acceptors experienced contraceptive failure, while the majority of adherent acceptors did not experience failure, confirms that failure is more due to inconsistent use than to failure of the method itself, in line with (Ayele *et al.* , 2024) and (Ayaga *et al.* , 2021). These findings also extend the results of previous observational studies that identified forgetting, delayed injections, and limited knowledge and counseling as key factors for non-adherence (Joyce *et al.* ,2022) This study provides strong contextual evidence at the primary health care level in Indonesia, while also strengthening the global literature that user behavioral factors play a key role. Public health policy implications emphasize the importance of improving the quality of counseling and adherence reminder systems, particularly for younger age groups and

hormonal contraceptive users, to reduce the risk of contraceptive failure and unintended pregnancy.

CONCLUSION

Side effects impact contraceptive success primarily by contributing to non-adherence. Contraceptive failure is more often due to irregular use than to problems with the method itself. Therefore, health workers at community health centers need to provide clear counseling about normal side effects and those that require investigation. Regional health offices need to improve the quality of family planning services through training and monitoring, while national policymakers need to strengthen family planning program policies by emphasizing education and compliance to ensure more consistent contraceptive use.

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